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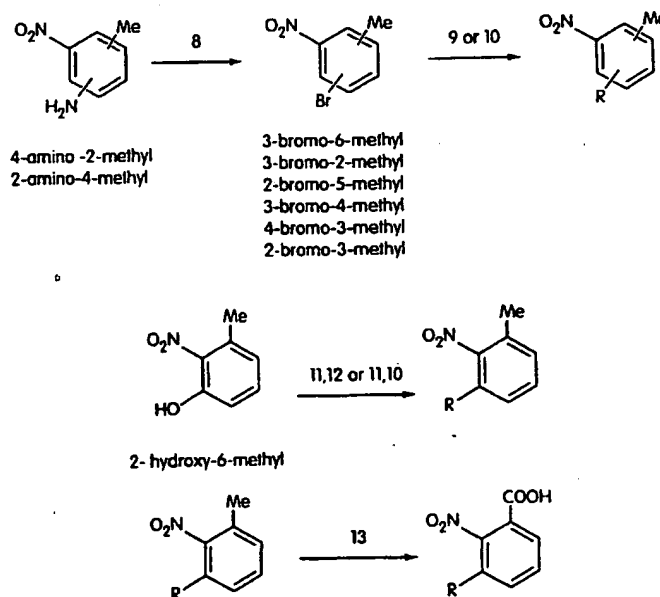
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[Continued on next page]

(54) Title: MEDIATORS OF HEDGEHOG SIGNALING PATHWAYS, COMPOSITIONS AND USES RELATED THERETO



(57) Abstract: The present invention makes available methods and reagents for inhibiting aberrant growth states resulting from *hedgehog* gain-of-function by contacting the cell with a *hedgehog* antagonist, such as a small molecule, in a sufficient amount to aberrant growth state, e.g., to agonize a normal *ptc* pathway or antagonize *hedgehog* activity.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/25461

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C07D239/91 C07D239/36 C07D471/04 C07D401/12 A61K31/505  
 A61P35/00 A61K7/48 A61K7/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CHEM ABS Data, EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 056 637 A (ISHIKAWA) 28 July 1982 (1982-07-28) the whole document ---	1,29-38
X	A.RAO ET AL.: "SYNTHESIS AND BIOLOGICAL ACTIVITIES OF CERTAIN DERIV. OF 3-ARYL-4(3H)-QUINAZOLINONES.II" JOURNAL OF INDIAN CHEM. SOC., vol. 62, no. 3, March 1985 (1985-03), pages 234-7, XP000982337 INDIA page 234 -page 236 --- -/-	31

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

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- \*A\* document member of the same patent family

Date of the actual completion of the international search

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BUDDHA DEO SINGH: "4-QUINAZOLONES.II" JOUR. INDIAN CHEM. SOC., vol. 46, no. 1, January 1969 (1969-01), pages 21-25, XP000982340 INDIA page 23 -page 24	31
X	CHEMICAL ABSTRACTS, vol. 96, no. 28, 1982 Columbus, Ohio, US; abstract no. 142790p, TIWARI, S.: "POSSIBLE ANTIFERTILITY COMPOUNDS-PART III:SYNTHESIS OF 2-HIPPURYL-3-ARYLQUINAZOLINONES." page 753; column 2; XP002166722 abstract & J. CHEM. SOC. PAK., vol. 3, no. 4, 1981, pages 215-7,	29,30

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1 to 4 and 29 (partially)

Present claims 1 to 4 and 29 relate to an extremely large number of possible compounds. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the compounds claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to the compounds:quinazolin-4-ones, pyridopyrimidinones and pyrimidinones (a.o.no. 27) as r1 value in formulas I,II, their preparation and their pharmaceutical use.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/25461

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 056637 A	28-07-1982	JP 57118570 A	23-07-1982
		JP 58023678 A	12-02-1983
		JP 58049370 A	23-03-1983
		AU 543928 B	09-05-1985
		AU 7917282 A	22-07-1982
		CA 1167442 A	15-05-1984
		DE 3264802 D	29-08-1985
		ES 508765 D	16-02-1983
		ES 8304097 A	16-05-1983
		US 4451467 A	29-05-1984

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